CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT

AES Greenfield, LLC
South of Intersection of Routes 67/231 and Route 57
Near Dixon, Indiana

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP-055-10724-00034	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

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SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM), and presented in the permit application.

A.1 General Information

The Permittee owns and operates an electric generating peaking station.

Responsible Official:	Paul Burdick
Source Address:	South of Intersection of Routes 67/231 & Route 57, Near Dixon, Indiana
Mailing Address:	c/o AES Corporation, 1001 North 19th Street, Arlington, VA 22209
SIC Code:	4911
County Location:	Greene
County Status:	Attainment for all criteria pollutants
Source Status:	Part 70 Permit Program Minor Source, under PSD Rules

A.2 Emission Units and Pollution Control Equipment Summary

This construction permit consists of the following emission units and pollution control devices:

(a) Four (4) natural gas-fired turbines, identified as Turbines 1, 2, 3 and 4, each with a net generating capacity of approximately 45 MW per turbine and a design heat input capacity of 460 million Btu per hour, with water injection for control of NO_X emissions, and each exhausting to one (1) stack, identified as Stacks 1, 2, 3 and 4.

Or

(a) Two (2) natural gas-fired turbines, identified as Turbines 1A and 2A, each with a net generating capacity of 170 MW per turbine and a design heat input capacity of 1865 million Btu per hour, with dry low-NO_X burners for control of NO_X emissions, and each exhausting to one (1) stack, identified as Stacks 1A and 2A.

(b) One (1) waste oil/water tank, identified as Tank 1, with a maximum capacity of 11,800 gallons and exhausting to the atmosphere.

A.3 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source will be required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

(a) It is a major source, as defined in 326 IAC 2-7-1(22); and

(b) It is an affected source under Title IV (Acid Deposition Control) of the Clean Air Act, as defined in 326 IAC 2-7-1(3).

This new source shall apply for a Part 70 (Title V) operating permit within twelve (12) months after this source becomes subject to Title V.

A.4 Acid Rain Permit Applicability [326 IAC 2-7-2]

This stationary source shall be required to have an Acid Rain permit by 40 CFR Part 72.30 (Applicability) because:

(a) The combustion turbines are new units under 40 CFR Part 72.6.

(b) The source cannot operate the combustion units until their Acid Rain permit has been issued.

SECTION B GENERAL CONSTRUCTION AND OPERATION CONDITIONS

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2-1 AND 40 CFR 52.780, WITH CONDITIONS LISTED BELOW.

Construction Conditions [326 IAC 2-1-3]

B.1 General Construction Conditions

(a) The data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Management (OAM).

(b) This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

B.2 Effective Date of the Permit [IC13-15-5-3]

Pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

B.3 Revocation of Permits [326 IAC 2-1-9(b)]

Pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

B.4 Permit Review Rules [326 IAC 2]

Notwithstanding Condition B.11, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

B.5 First Time Operation Permit [326 IAC 2-1-4]

This document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:

(a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM if the provisions of 40 CFR Parts 72-80 (Acid Rain Program) are not applicable to such facilities. If the facilities are subject to the provisions of 40 CFR Parts 72-80 (Acid Rain Program), then the proper Acid Rain permit must be issued to such facilities before operation can commence.

(b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.

(c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

(d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).

B.6 NSPS Reporting Requirement [40 CFR 60, Subpart A]

That pursuant to the New Source Performance Standards (NSPS), Part 60.7, Subpart A, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

(a) Commencement of construction date (no later than 30 days after such date);

(b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);

(c) Actual start-up date (within 15 days after such date); and

(d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, IN 46206-6015

The application and enforcement of these standards have been delegated to the IDEM-OAM. The requirements of 40 CFR Part 60 are also federally enforceable.

Operation Conditions

B.7 General Operation Conditions

(a) The data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).

(b) The Permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC13-17) and the rules promulgated thereunder.

B.8 Preventive Maintenance Plan [326 IAC 1-6-3]

Pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:

(a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.

(b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.

(c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

B.9 Malfunctions Report [326 IAC 1-6-2]

Pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

(a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.

(b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

(c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).

(d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39].

B.10 Transfer of Permit [326 IAC 2-1-6]

Pursuant to 326 IAC 2-1-6 (Transfer of Permits):

(a) In the event that ownership of the electric generating peaking station is changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.

(b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.

(c) The OAM shall reserve the right to issue a new permit.

B.11 Permit Revocation [326 IAC 2-1-9]

Pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

(a) Violation of any conditions of this permit.

(b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.

(c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.

(d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.

(e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

B.12 Availability of Permit [326 IAC 2-1-3(l)]

Pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain all applicable permits on the premises of the source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

Emission Limitation and Standards

C.1 PSD Minor Source Status [326 IAC 2-2] [40 CFR 52.21]

(a) The potential to emit of nitrogen oxides (NO_x) and carbon monoxide (CO) for the facilities listed in this construction permit, are greater than 250 tons per year. The potential to emit, of the above listed pollutants, is limited to less than 250 tons per year, therefore the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) and 40 CFR 52.21 will not apply.

(b) Any change or modification which may increase the allowable emissions, potential emissions, or potential to emit, as appropriate, to the following:

(1) 25 tons per year or more (326 IAC 2-1),

(2) 100 tons per year or more, and greater than 10 tons per year for a single HAP or combination HAPs greater than 25 tons per year (326 IAC 2-7),

(3) 250 tons per year or more (326 IAC 2-2),

from the equipment covered in this construction permit must be approved by the Office of Air Management (OAM) before such change may occur.

C.2 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period

C.3 Operation of Equipment [326 IAC 2-1-3]

All air pollution control equipment listed in this permit shall be in placed or operated at all times that the emission units vented to the control equipment are in operation, as described in Section D of this permit.

Testing Requirements

C.4 Performance Testing [326 IAC 3-6]

(a) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing methods approved by IDEM, OAM.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than thirty-five (35) days prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

(b) All test reports must be received by IDEM, OAM within forty-five (45) days after the completion of the testing. An extension may be granted by the Commissioner, if the source submits to IDEM, OAM, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Monitoring Requirements

C.5 Compliance Monitoring [326 IAC 2-1-3]

Compliance with applicable requirements shall be documented as required by this permit. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment upon initial start-up of the facility. If due to circumstances beyond its control, this schedule cannot be met, the Permittee shall notify:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

in writing, no more than ninety (90) days after receipt of this permit, with full justification of the reasons for the inability to meet this date and a schedule which it expects to meet. If a denial of the request is not received before the monitoring is fully implemented, the schedule shall be deemed approved.

C.6 Monitoring Methods [326 IAC 3]

Any monitoring or testing performed to meet the requirements of this permit shall be performed, according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.

Corrective Actions and Response Steps

C.7 Emergency Reduction Plans [326 IAC 1-5-2] [326 IAC 1-5-3]

Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

(a) The Permittee shall prepare written emergency reduction plans (ERPs) consistent with safe operating procedures.

(b) These ERPs shall be submitted for approval to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Management
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

within 180 days from the date on which this source commences operation.

(c) If the ERP is disapproved by IDEM, OAM, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP. If after this time, the Permittee does not submit an approvable ERP, then IDEM, OAM, shall supply such a plan.

(d) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.

(e) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.

(f) Upon direct notification by IDEM, OAM, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate episode level. [326 IAC 1-5-3]

Record Keeping and Reporting Requirements

C.8 Annual Emission Reporting [326 IAC 2-6]

Pursuant to 326 IAC 2-6 (Emission Reporting), the Permittee must annually submit an emission statement for the source. This statement must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. The annual statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

The annual emission statement covers the twelve (12) consecutive month time period starting December 1 and ending November 30.

C.9 Monitoring Data Availability [326 IAC 2-1-3]

(a) With the exception of performance tests conducted in accordance with Section C-Performance Testing. All observations, sampling, maintenance procedures, and record keeping, required as a condition of this permit shall be performed at all times the equipment is operating at normal representative conditions.

(b) As an alternative to the observations, sampling, maintenance procedures, and record keeping of subsection (a) above, when the equipment listed in Section D of this permit is not operating, the Permittee shall either record the fact that the equipment is shut down or perform the observations, sampling, maintenance procedures, and record keeping that would otherwise be required by this permit.

(c) If the equipment is operating but abnormal conditions prevail, additional observations and sampling should be taken with a record made of the nature of the abnormality.

(d) If for reasons beyond its control, the operator fails to make required observations, sampling, maintenance procedures, or record keeping, reasons for this must be recorded.

(e) At its discretion, IDEM may excuse such failure providing adequate justification is documented and such failures do not exceed five percent (5%) of the operating time in any quarter.

(f) Temporary, unscheduled unavailability of staff qualified to perform the required observations, sampling, maintenance procedures, or record keeping shall be considered a valid reason for failure to perform the requirements stated in (a) above.

C.10 General Record Keeping Requirements [326 IAC 2-1-3]

(a) Records of all required monitoring data and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location and available within one (1) hour upon verbal request of an IDEM, OAM, representative, for a minimum of three (3) years. They may be stored elsewhere for the remaining two (2) years providing they are made available within thirty (30) days after written request.

(b) Records of required monitoring information shall include, where applicable:

(1) The date, place, and time of sampling or measurements;

(2) The dates analyses were performed;

(3) The company or entity performing the analyses;

(4) The analytic techniques or methods used;

(5) The results of such analyses; and

(6) The operating conditions existing at the time of sampling or measurement.

(c) Support information shall include, where applicable:

(1) Copies of all reports required by this permit;

(2) All original strip chart recordings for continuous monitoring instrumentation;

(3) All calibration and maintenance records;

(4) Records of preventive maintenance shall be sufficient to demonstrate that improper maintenance did not cause or contribute to a violation of any limitation on emissions or potential to emit. To be relied upon subsequent to any such violation, these records may include, but are not limited to: work orders, parts inventories, and operator's standard operating procedures.

(d) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

C.11 General Reporting Requirements [326 IAC 2-1-3]

(a) Reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

(b) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAM, on or before the date it is due.

(c) Unless otherwise specified in this permit, any report shall be submitted within thirty (30) days after the end of the reporting period.

(d) All instances of deviations must be clearly identified in such reports. A reportable deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit or a rule. It does not include:

(1) an excursion from compliance monitoring parameters as identified in Section D of this permit unless tied to an applicable rule or limit; or

(2) an emergency as defined in 326 IAC 2-7-1(12); or

(3) failure to implement elements of the Preventive Maintenance Plan unless lack of maintenance has caused or contributed to a deviation.

(4) failure to make or record information required by the compliance monitoring provisions of Section D unless such failure exceeds 5% of the required data in any calendar quarter.

A Permittee's failure to take the appropriate response step when an excursion of a compliance monitoring parameter has occurred or failure to monitor or record the required compliance monitoring is a deviation.

(e) Any corrective actions or response steps taken as a result of each deviation must be clearly identified in such reports.

(f) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period.

SECTION D.1 FACILITY CONDITIONS

(a)	Four (4) natural gas-fired turbines, identified as Turbines 1, 2, 3 and 4, each with a net generating capacity of approximately 45 MW per turbine and a design heat input capacity of 460 million Btu per hour, with water injection for control of NO_X emissions, and each exhausting to one (1) stack, identified as Stacks 1, 2, 3 and 4.
Or	
(a)	Two (2) natural gas-fired turbines, identified as Turbines 1A and 2A, each with a net generating capacity of 170 MW per turbine and a design heat input capacity of 1865 million Btu per hour, with dry low-NO_X burners for control of NO_X emissions, and each exhausting to one (1) stack, identified as Stacks 1A and 2A.
(b)	One (1) waste oil/water tank, identified as Tank 1, with a maximum capacity of 11,800 gallons and exhausting to the atmosphere.

Emissions Limitation and Standards

D.1.1 Turbine Construction and Operation [326 IAC 2-2]

The Permittee shall construct and operate either Turbines 1A and 2A or Turbines 1, 2, 3 and 4. All six (6) turbines or any other combination of the turbines, other than the combinations specified in the previous sentence, may not be constructed and operated.

D.1.2 Fuel Usage Limitations [326 IAC 2-2]

(a) The total "weighted" natural gas usage for the turbines shall be less than 5,020 million cubic feet (MMCF) during any twelve (12) consecutive month period. Based on a higher heating value for natural gas of 1,020 Btu per cubic foot, this fuel usage limitation is equivalent to CO emissions of less than 250 tons during any twelve (12) consecutive month period. This limitation will also restrict NO_X emissions to less than 250 tons during any twelve (12) consecutive month period. Therefore, the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.

(b) The "weighted" natural gas usage is determined in the winter months (October through April) by multiplying the actual natural gas usage by 2.35. During the summer months (May through September) the actual natural gas usage is equivalent to the "weighted" natural gas usage.

D.1.3 General Provisions Relating to NSPS [326 IAC 12-1][40 CFR Part 60, Subpart A]

The provisions of 40 CFR Part 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to the facility described in this section except when otherwise specified in 40 CFR Part 60, Subpart GG.

D.1.4 Stationary Gas Turbines [40 CFR Part 60, Subpart GG] [326 IAC 12]

Pursuant to 40 CFR 60, Subpart GG (Stationary Gas Turbines), the Permittee shall:

(a) Limit oxides of nitrogen (NO_X) emissions, as required by 40 CFR 60.332, to:

$$STD = 0.0075 \frac{(14.4)}{Y} + F,$$

where STD = allowable NO_x emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peck load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NO_x emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.

(b) Limit sulfur dioxide (SO_2) emissions, as required by 40 CFR 60.333, to 0.015 percent by volume at 15 percent oxygen on a dry basis, or use natural gas fuel with a sulfur content less than or equal to 0.8 percent by weight;

D.1.5 Emission Rate Limitations [326 IAC 2-2] [326 IAC 8-1-6]

(a) The CO and NO_X emission rates from the turbines during the summer months (May through September) shall not exceed 99.5 pounds per million cubic feet of natural gas combusted. The CO and NO_X emission rates from the turbines during the winter months (October through April) shall not exceed 233.8 pounds per million cubic feet of natural gas combusted. Compliance with these limitations along with Condition D.1.2 will ensure that the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, do not apply.

(b) The VOC emission rate from the turbines during the summer months (May through September) shall not exceed 9.5 pounds per million cubic feet of natural gas combusted. The VOC emission rate from the turbines during the winter months (October through April) shall not exceed 22.3 pounds per million cubic feet of natural gas combusted. Compliance with these limitations along with Condition D.1.2 will ensure that the VOC Best Available Control Technology (BACT) rule, 326 IAC 8-1-6, does not apply.

D.1.6 Sulfur Dioxide (SO_2) Limitation [326 IAC 7-1.1]

The combustion turbines shall utilize natural gas as their only source of fuel. Therefore, the requirements of 326 IAC 7-1.1 will not apply.

D.1.7 Volatile Organic Liquid Storage Vessel [40 CFR Part 60, Subpart Kb]

The oil/water tank is exempt from the General Provisions (Part 60, Subpart A) and from the limitations of Subpart Kb because the capacity of the tank is less than 75 m^3 and stores a liquid with a maximum true vapor pressure less than 3.5 kPa. However because the tank has a capacity greater than 40 m^3, pursuant to 40 CFR 60.116b, the Permittee shall keep records as specified in Condition D.1.13.

D.1.8 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and its control device.

Compliance Determination Requirements

D.1.9 Testing Requirements

(a) Within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, the Permittee shall perform NO_X stack tests for each turbine utilizing methods as approved by the Commissioner. These tests shall be performed in accordance with 40 CFR Part 60, Subpart GG, 40 CFR Part 75 and Section C - Performance Testing, in order to document compliance with Conditions D.1.4 and D.1.11.

(b) Within eighteen (18) months after initial start-up, the Permittee shall perform NO_X and CO stack tests for each turbine utilizing methods as approved by the Commissioner. These tests shall be performed during the summer months (May through September), in accordance with Section C -Performance Testing, in order to document compliance with Condition D.1.5(a). If the NO_X stack tests required in (a) of this condition are performed during the summer months (May through September), separate NO_X tests are not required.

(c) Within eighteen (18) months after initial start-up, the Permittee shall perform VOC stack tests for each turbine utilizing methods as approved by the Commissioner. Separate testing shall be performed during the summer months (May through September) and winter months (October through April). These tests shall be performed in accordance with Section C -Performance Testing, in order to document compliance with Condition D.1.5(b).

Compliance Monitoring Requirements

D.1.10 Sulfur Content and Nitrogen Content Monitoring [40 CFR Part 60, Subpart GG]

(a) Pursuant to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines), the Permittee shall monitor the nitrogen and sulfur content of the natural gas on a daily basis as follows:

(1) Monitor the sulfur content of the natural gas being fired in the turbine by ASTM methods D 1072-80, D 3031-81, D 4084-82, or D 3246-81. The applicable ranges of some ASTM methods mentioned are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator.

(2) Monitor the nitrogen content of the natural gas being fired in the turbine by using analytical methods and procedures that are accurate to within 5 percent and are approved by the Administrator.

(b) The analyses required above may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor or any other qualified agency.

(c) Owners, operators or fuel vendors may develop custom schedules for determination of the nitrogen and sulfur content based on the design and operation of the affected facility and the characteristics of the fuel supply. These custom schedules shall be substantiated with data and must be approved by the Administrator before they can be used to comply with the above requirements.

The NO_X and SO_2 monitoring required by 40 CFR Part 75 and specified in Condition D.1.11 shall satisfy the requirements of nitrogen content monitoring for the purposes of 40 CFR Part 60, Subpart GG.

D.1.11 Acid Rain Monitoring Requirements [40 CFR Part 72.9] [40 CFR Part 75]

(a) Pursuant to 40 CFR 72.9 and 40 CFR 75.11, the Permittee has elected to monitor SO_2 emissions from the natural gas-fired combustion turbines pursuant to 40 CFR 75, Appendix D. Appendix D includes, but is not limited to, the following requirements:

(1) For each hour when the unit is combusting fuel, the Permittee shall measure and record the flow of fuel combusted by the unit with an in-line flowmeter and automatically record the data with a data acquisition and handling system. This shall be performed in accordance with the procedures specified in Section 2.1 of Appendix D.

(2) The Permittee shall use the default SO_2 emission rate of 0.0006 lb/MMBtu and the hourly input from pipeline natural gas in MMBtu/hr, as determined using the procedures in section 5.5 of Appendix F to 40 CFR Part 75. The Permittee shall calculate SO_2 emissions using equation D-5 of Appendix D.

(3) The Permittee shall provide information on the contractual sulfur content from the pipeline gas supplier in the monitoring plan for the unit, demonstrating that the gas has a hydrogen sulfide content of 1 grain/100 scf or less, and a total sulfur content of 20 grain/100 scf or less.

(b) Pursuant to 40 CFR 72.9 and 40 CFR 75.12, the Permittee has elected to monitor NO_X emissions from the natural gas-fired combustion turbines pursuant to 40 CFR 75, Appendix E, which is used for peaking units. Appendix E includes, but is not limited to, the following requirements:

(1) The Permittee shall perform initial performance tests for each turbine to measure NO_X emission rates at heat input rate levels corresponding to different load levels, measure the heat input rate, and plot the correlation between heat input rate and NO_X emission rate, in order to determine the emission rate of the units. This testing shall be performed in accordance with section 2.1 of Appendix E.

(2) The Permittee shall retest the NO_X emission rate of the turbines prior to the earlier of 3,000 unit operating hours or the 5 year anniversary and renewal of its operating permit under 40 CFR Part 72.

(3) The Permittee shall record the time (hr. and min.), load (MWge or steam load in 1000 lb/hr), fuel flow rate and heat input rate (using the procedures in section 2.1.3 of Appendix E) for each hour during which the unit combusts fuel. The Permittee shall calculate the total hourly heat input using equation E-1 of Appendix E and record the heat input rate for each fuel to the nearest 0.1 MMBtu/hr. During partial unit operating hours, heat input must be represented as an hourly rate in MMBtu/hr, as if the fuel were combusted for the entire hour at that rate in order to ensure proper correlation with the NO_X emission rate graph.

(4) The Permittee shall use the graph of the baseline correlation results to determine the NOX emissions rate (lb/MMBtu) corresponding to the heat input rate (MMBtu/hr) and input this correlation into the data acquisition and handling system for the turbines. The data shall be linearly interpolated to 0.1 MMBtu/hr heat input rate and 0.01 lb/MMBtu.

If either combustion turbine exceeds a capacity factor of 20 percent in any given year, or an average capacity factor of 10 percent for the previous 3 years, then the Permittee shall install, certify, and operate a NO_X continuous emission monitoring (CEM) system by December 31 of the following calendar year. The NO_X CEM system shall meet the minimum requirements of 40 CFR Part 75 and 326 IAC 3-5.

D.1.12 Water-to-Fuel Ratio Monitoring [40 CFR 60.330, Subpart GG]

If water injection is used to control NO_X emissions from the turbines, the Permittee shall install and operate a continuous monitoring system to monitor and record the fuel consumption and the ratio of water to fuel being fired in the turbine. This system shall be accurate to within ±5.0 percent and shall be approved by the IDEM, OAM.

Record Keeping and Reporting Requirements [326 IAC 2-1-3]

D.1.13 Record Keeping Requirements

(a) To document compliance with Condition D.1.2, the Permittee shall maintain records of the monthly fuel usage.

(b) To document compliance with Conditions D.1.4 and D.1.11, the Permittee shall maintain records of the SO_2 and NO_X emissions in accordance with 40 CFR Part 75, Appendices D and E. In addition the hours of operation of each turbine shall be recorded and maintained to ensure that the turbines are defined as peaking units.

(c) To document compliance with 40 CFR Part 60, Subpart Kb, the Permittee shall keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel.

(d) To document compliance with Condition D.1.12, the Permittee shall maintain records of fuel consumption and the ratio of water to fuel being fired in the turbines.

(e) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.1.14 Reporting Requirements

(a) A quarterly summary of the information to document compliance with Condition D.1.2 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported.

(b) The Permittee shall submit a quarterly excess emissions report indicating any period during which the NO_X emissions from the turbines were greater than the amount allowed by the equation in Condition D.1.4, or any period during which the fuel bound nitrogen of the fuel is greater than the maximum nitrogen content allowed by the fuel-bound nitrogen allowance used during the performance test required in Condition D.1.9.

(c) The Permittee shall submit a quarterly excess emissions report indicating any daily period during which the SO_2 emissions from the turbines were greater than the amount allowed in Condition D.1.4.

(d) If water injection is used to control NO_X emissions from the turbines, the Permittee shall submit reports of any one-hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the water-to-fuel ratio determined to demonstrate compliance with Condition D.1.4 by the performance test required in Condition D.1.9.

(e) These reports shall be submitted within thirty (30) calendar days following the end of each calendar quarter and shall be in accordance with Condition C.11 - General Reporting Requirements of this permit.

MALFUNCTION REPORT

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT
FAX NUMBER - 317 233-5967

This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE: IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATES ?_____, 100 LBS/HR VOC ?_____, 100 LBS/HR SULFUR DIOXIDE ?_____ OR 2000 LBS/HR OF ANY OTHER POLLUTANT ?_____ EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION _____.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC _____ OR, PERMIT CONDITION # _____ AND/OR PERMIT LIMIT OF _____

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ? Y N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ? Y N

COMPANY: AES Greenfield, LLC. PHONE NO. (703) 358-0501

LOCATION: Greene County
PERMIT NO. 055-10724 AFS PLANT ID: 055-00034 AFS POINT ID: _____ INSP: _____
CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON:
_____

DATE/TIME MALFUNCTION STARTED: _____/_____/ 19____ _____ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION:_____

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE_____/_____/ 19____ _____ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER:_____
ESTIMATED AMOUNT OF POLLUTANT MITTED DURING MALFUNCTION: _____
MEASURES TAKEN TO MINIMIZE EMISSIONS:_____
REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL* SERVICES: _____
CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS:_____
CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT:_____
INTERIM CONTROL MEASURES: (IF APPLICABLE)
_____
MALFUNCTION REPORTED BY: _____TITLE:_____
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: _____DATE:_____TIME:_____

FAX NUMBER - 317 233-5967

Please note - This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

326 IAC 1-6-1 Applicability of rule

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO2, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 "Malfunction" definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

_____

_____

Indiana Department of Environmental Management
Office of Air Management
Compliance Data Section

Quarterly Report

Company Name: AES Greenfield, LLC
Location: South of Intersection of Routes 67/231 and Route 57, Near Dixon, Indiana
Permit No.: 055-10724-00034
Source: Combustion turbines
Pollutant: NOX, CO
Limit: Less than 5,020 MMCF per twelve (12) consecutive month period (equivalent to less than 250 ton per (12) consecutive month period)

Year: _____

Month	Natural Gas Usage This Month (MMCF)	Weighting Factor	"Weighted" Natural Gas Usage This Month (MMCF)*	"Weighted" Natural Gas Usage for Past 11 Months (MMCF)	Total "Weighted" Natural Gas Usage for 12 Month Period (MMCF)

* To obtain the "weighted" natural gas usage, multiply the actual natural gas usage for the month by the weighting factor. The weighting factor is 2.35 and should be used for months October through April.

Submitted by: _____

Title/Position: _____

Signature: _____

Date: _____

Phone: _____

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name:	AES Greenfield, LLC
Source Location:	South of Intersection of Routes 67/231 & 57, near Dixon, Indiana
County:	Greene
Construction Permit No.:	CP 055-10724-00034
SIC Code:	4911
Permit Reviewer:	Bryan Sheets

The Office of Air Management (OAM) has reviewed an application from AES Greenfield, LLC, relating to the construction and operation of a electric peaking station, consisting of the following equipment:

(a) Four (4) natural gas-fired turbines, identified as Turbines 1, 2, 3 and 4, each with a net generating capacity of approximately 45 MW per turbine and a design heat input capacity of 460 million Btu per hour, with water injection for control of NO_X emissions, and each exhausting to one (1) stack, identified as Stacks 1, 2, 3 and 4.

Or

(a) Two (2) natural gas-fired turbines, identified as Turbines 1A and 2A, each with a net generating capacity of 170 MW per turbine and a design heat input capacity of 1865 million Btu per hour, with dry low-NO_X burners for control of NO_X emissions, and each exhausting to one (1) stack, identified as Stacks 1A and 2A.

(b) One (1) waste oil/water tank, identified as Tank 1, with a maximum capacity of 11,800 gallons and exhausting to the atmosphere.

AES Greenfield, LLC has requested that they be given the option of constructing two large turbines or four small turbines. The description above for (a) represents both options.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
1	Turbine 1	45	9	561,000	821
2	Turbine 2	45	9	561,000	821
3	Turbine 3	45	9	561,000	821
4	Turbine 4	45	9	561,000	821
1A	Turbine 1A	90	18.5	2,200,000	1,050
2A	Turbine 2A	90	18.5	2,200,000	1,050

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on March 9, 1999, with additional information received on April 21, 1999 and May 5, 1999.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations.

The VOC emissions from the oil/water storage tank are considered insignificant by the Office of Air Management.

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)		100.4
Particulate Matter (PM10)		100.4
Sulfur Dioxide (SO_2)	6142	10.5
Volatile Organic Compounds (VOC)		132.9
Carbon Monoxide (CO)		781.4
Nitrogen Oxides (NO_x)	2293	1518.2
Single Hazardous Air Pollutant (HAP)		20.4
Combination of HAPs		36.7

(a) Allowable emissions for turbines are determined from the applicability of 40 CFR Part 60, Subpart GG. These allowable emissions are determined as follows:

SO_2 limit of 0.8% sulfur content:

[0.8 x 0.94] lbs/MMBtu x 1864.7 MMBtu/hr x 8760 hrs/yr / 2000 lbs/ton = 6141.9 tons/yr

NO_X limit is calculated by:

$$NO_X \text{ limit} = 0.0075 \times \frac{(14.4)}{Y} + F$$

where F=0 [based on 0.015% fuel bound nitrogen content and table in 40 CFR 60.332(a)(3)]
Y= 11.4 KJ/W-hr (manufacturer's rated net heat rates)

NO_X limit = 95 ppm_v

$$\frac{7.7E05 \text{ scf}}{\text{min}} \times \frac{\text{lb mole ER}}{0.7302 \text{ ft}^3 \text{ atm}} \times \frac{1 \text{ atm}}{528 \text{ ER}} \times \frac{95 \text{ parts}}{10^6 \text{ parts}} \times \frac{46 \text{ lb}}{\text{lb mole}} \times \frac{60 \text{ min}}{\text{hr}} = 523.7 \text{ lbs/hr}$$

See attached spreadsheets for detailed calculations of potential emissions.

(b) The allowable emissions for SO_2 and NO_X based on the rules cited are greater than the potential emissions, therefore, the potential emissions are used for the permitting determination.

(c) Allowable emissions (as defined in the Indiana Rule) of NO_X, CO, VOC, PM and PM_{10} are greater than 25 tons per year. Also, allowable emissions of a single HAP and a combination of HAPs are greater than 10 and 25 tons per year, respectively. Therefore, pursuant to 326 IAC 2-5.1-3, a construction permit is required.

County Attainment Status

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_X) are precursors for the formation of ozone. Therefore, VOC and NO_X emissions are considered when evaluating the rule applicability relating to the ozone standards. Greene County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Henry County has been classified as attainment or unclassifiable for PM_{10}, CO, SO_2 and lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

New Source PSD Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	27.0
PM10	27.0
SO_2	1.6
VOC	23.8
CO	249.7
NO_X	237.9
Single HAP	6.4
Combination HAPs	11.5

(a) This new source is **not** a major stationary source because no attainment pollutant is emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

(b) The emission rate of CO and the usage of natural gas has been limited to ensure that CO emissions will be less than 250 ton per year limit. Compliance with the limits shall be demonstrated by stack tests, monitoring and record keeping.

The potential to emit from the remaining pollutants are also limited by the natural gas usage limit. The emissions of PM, PM_{10}, SO_2, VOC, NO_X and HAPs listed above reflect the limited potential to emit.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

(a) at least one of the criteria pollutant is greater than or equal to 100 tons per year,
(b) a single hazardous air pollutant (HAP) is greater than or equal to 10 tons per year, or
(c) any combination of HAPs is greater than or equal to 25 tons/year.

This new source shall apply for a Part 70 (Title V) operating permit within twelve (12) months after this source becomes subject to Title V.

Federal Rule Applicability

(a) The two (2) turbines are subject to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines) because the heat input at peak load is equal to or greater than 10.7 gigajoules per hour, based on the lower heating value of the fuel fired. Pursuant to 326 IAC 12-1 and 40 CFR 60, Subpart GG (Stationary Gas Turbines), the Permittee shall:

(1) Limit nitrogen oxides emissions, as required by 40 CFR 60.332, to:

$$STD = 0.0075 \frac{(14.4)}{Y} + F ,$$

where STD = allowable NO_x emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peck load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NO_x emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.

(2) Limit sulfur dioxide emissions, as required by 40 CFR 60.333, to 0.015 percent by volume at 15 percent oxygen on a dry basis, or use natural gas fuel with a sulfur content less than or equal to 0.8 percent by weight;

(3) If water injection is used to control NO_X emissions, install a continuous monitoring system to monitor and record the fuel consumption and the ratio of water to fuel being fired in the turbine, as required by 40 CFR 60.334(a);

(4) Monitor the sulfur content and nitrogen content of the fuel being fired in the turbine, as required by 40 CFR 60.334(b); and

(5) Report periods of excess emissions, as required by 40 CFR 334(c).

(b) The oil/water tank is subject to 40 CFR Part 60, Subpart Kb (Volatile Organic Storage Vessels) because the maximum capacity is greater than 40 m^3 that is used to store volatile organic liquids (including petroleum) for which construction, reconstruction, or modification commenced after July 23, 1984.

Pursuant to 40 CFR 60.110b(c), the tank is exempt from the General Provisions (Part 60, subpart A) and from the provisions of Subpart Kb because the design capacity of the tank is greater than or equal to 40 m^3 but less than 75 m^3, and is used to store liquid with a maximum true vapor pressure less than 3.5 kPa. However, pursuant to 40 CFR Part 60.116b, the Permittee shall keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel.

(c) There are no National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Parts 61 and 63 applicable to this facility.

(d) The two (2) natural gas-fired turbines are subject to the requirements of 40 CFR Part 72 (Acid Rain Permit Program) because they are considered new units. Pursuant to 40 CFR Part 72, this source is required to submit an application and obtain a Phase II Acid Rain Permit before operation of the gas turbines can commence. The requirements of this program shall be detailed in the Acid Rain Permit.

State Rule Applicability

326 IAC 2-6 (Emission Reporting)

These facilities are subject to 326 IAC 2-6 (Emission Reporting), because the source emits more than 100 tons/yr of CO, VOC and NO_X in Greene County . Pursuant to this rule, the owner/operator of this source must annually submit an emission statement of the source. The annual statement must be received by July 1 of each year and must contain the minimum requirements as specified in 326 IAC 2-6-4.

326 IAC 4-1 (Open Burning)

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1.

326 IAC 5-1 (Visible Emissions Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 2-2 (Prevention of Significant Deterioration)

The natural gas usage from the two (2) natural gas-fired turbines shall be limited to 5,020 million cubic feet (MMCF) per twelve (12) consecutive month period. This usage limit is necessary to limit the potential to emit of CO from the turbines to less than 250 tons per twelve (12) consecutive months. Therefore, the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.

Emissions from these turbines change based on the ambient temperature. Depending on the vendor, some emission rates increase with temperature and some decrease with temperature. Since the turbines will be operated almost exclusively during the summer months and emissions from these turbines during those months (from 57 to 90 degrees F) will be relatively steady, the calculations were based on worst case summertime emissions (May through September).

There will be a factor multiplied by the actual natural gas usage during the months of October through April to ensure that emissions do not exceed the amount determined from summertime emission factors. The factor is calculated based on the worst case ratio between summertime and winter emission factors. In this case, VOC emissions have the greatest increase during the winter months. The VOC emission factor increases from 9.5 to 22.3 lbs/MMCF. Therefore, the ratio is 2.35 and this value shall be used as the winter usage factor. The limitations as stated in these first three paragraphs apply to either option of constructing four (4) or two (2) turbines.

In order to ensure that the usage limitation mentioned in the first paragraph will allow the facility to have emissions below the PSD thresholds, the Permittee has elected to limit emission rates from the turbines. These emission rates, in pounds per million cubic feet (lb/MMCF), are based on parts per million (ppm) values that have been guaranteed by the vendors. Based on these limitations and the natural gas usage limitation, the source does not have to use the Best Available Control Technology (BACT).

However, if the Permittee ever elects to relax the natural gas usage limitation such that the PSD rules apply, the Permittee would be required, at a minimum, to install burners which meet the value considered to be BACT at this time or install add-on controls which could meet the same emission rate. For example, the Permittee is installing turbines that have been guaranteed by the vendor to meet a NO_X emission rate of 25 ppm, but permits for similar units have recently been issued with BACT set at 15 ppm. Therefore, at a minimum, the Permittee would be required to meet that limit.

326 IAC 3-5 (Continuous Monitoring of Emissions)

If continuous emissions monitors (CEM) are used to meet the requirements of 40 CFR Part 60, Subpart GG or 40 CFR Part 72, then the Permittee will be required to install, calibrate, certify, operate and maintain a continuous monitoring system for measuring NO_x and CO_2 emissions in accordance with the requirements of 326 IAC 3-5-2 and 326 IAC 3-5-3.

326 IAC 6-2 (Particulate Matter Emissions from Sources of Indirect Heating)

The requirements of 326 IAC 6-2 do not apply to the turbines because the combustion units are not utilized as a source of indirect heating. No other 326 IAC 6 rules apply.

326 IAC 7-1 (Sulfur Dioxide Emission Limitations)

The two (2) natural gas-fired turbines shall use natural gas as the only fuel. Therefore, the requirements of 326 IAC 7-1.1-2 will not apply.

326 IAC 8-1-6 (General VOC Reduction Requirements)

The natural gas usage limit and winter factor required to limit CO emissions to less than 250 tons per year and the vendor's VOC emission rate will limit the potential to emit VOC to less than 25 tons per year. Therefore, the requirements of 326 IAC 8-1-6 do not apply. Compliance with this will be demonstrated by a stack test and record keeping. No other 326 IAC 8 rules apply.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 188 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

(a) These new combustion turbines will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Amendments to Clean Air Act.

(b) See attached spreadsheets for detailed air toxic calculations (Page 2 of 3).

Conclusion

The construction of the two (2) natural gas-fired turbines will be subject to the conditions of the attached proposed **Construction Permit No. CP-055-10724-00034.**

Appendix A: Emissions Calculations
Stationary Gas Turbines for Electricity Generation
Potential To Emit for Three Vendors

Company Name: AES Greenfield, LLC
Address City IN Zip: South of Intersection of Routes 67/231 & Route 57, Greene County
CP: 055-10724-00034
Plt ID: 055-00034
Reviewer: Bryan Sheets
Date: 4-5-99

A. Vendor 1 (Two Turbines @ Maximum Heat Input Capacity of 1862.2 MMBtu/hr)

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr	Limited Throughput MMCF/yr	Sulfur Content (S) %
3724.4	31986.0	5020.0	0.000681

	PM	PM10	SO2	NOx	VOC	CO
Emission Factor (lb/MMCF)	4.1	4.1	0.653 *(0.94S)*	92.9	7.9	22.5
Potential to Emit (tons/yr)	65.6	65.6	10.4	1485.8	126.3	359.8
Limited Potential to Emit (tons/yr)	10.3	10.3	1.6	233.2	19.8	56.5

B. Vendor 2 (Two Turbines @ Maximum Heat Input Capacity of 1864.7 MMBtu/hr)

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr	Limited Throughput MMCF/yr	Sulfur Content (S) %
3729.4	32029.0	5020.0	0.000681

	PM	PM10	SO2	NOx	VOC	CO
Emission Factor (lb/MMCF)	5.7	5.7	0.653 *(0.94S)*	94.8	8.3	27.4
Potential to Emit (tons/yr)	91.3	91.3	10.5	1518.2	132.9	438.8
Limited Potential to Emit (tons/yr)	14.3	14.3	1.6	237.9	20.8	68.8

C. Vendor 3 (Four Turbines @ Maximum Heat Input Capacity of 457.2 MMBtu/hr)

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr	Limited Throughput MMCF/yr	Sulfur Content (S) %
1828.8	15706.2	5020.0	0.000681

	PM	PM10	SO2	NOx	VOC	CO
Emission Factor (lb/MMCF)	7.1	7.1	0.653 *(0.94S)*	92.4	9.5	99.5
Potential to Emit (tons/yr)	55.8	55.8	5.1	725.6	74.6	781.4
Limited Potential to Emit (tons/yr)	17.8	17.8	1.6	231.9	23.8	249.7

Methodology
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
All emissions are based on worst case operation during summer months (May to September).
Emission Factors for NOx, CO, VOC and PM10 are from vendor of the gas turbines. These will be verified by stack tests.
Emission Factor for SO2 is from AP-42, Chapter 3.1, Table 3.1-1.
Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu
Potential to Emit (tons/yr) = Potential Throughput (MMCF/yr) x Emission Factor (lb/MMCF) / 2,000 lb/ton
Limited Potential To Emit (tons/yr) = Limited Throughput (MMCF/yr) x Emission Factor (lb/MMCF) / 2,000 lb/ton

Appendix A: Emissions Calculations
Stationary Gas Turbines for Electricity Generation
HAP Emissions

Company Name: AES Greenfield, LLC
Address City IN Zip: South of Intersection of Routes 67/231 & Route 57, Greene County
CP: 055-10724-00034
Plt ID: 055-00034
Reviewer: Bryan Sheets
Date: 4-5-99

Potential Throughput MMCF/yr	Limited Throughput MMCF/yr
16014.5	5020.0

Pollutant	Emission Factor (lbs/MMCF)	Potential Emissions (tons/yr)	Limited Emissions (tons/yr)
Antimony	0.0224	0.18	0.06
Arsenic	0.0050	0.04	0.01
Beryllium	0.0003	0.00	0.00
Cadmium	0.0043	0.03	0.01
Chlorine/HCl	2.550	20.42	6.40
Chromium	0.0479	0.38	0.12
Cobalt	0.0093	0.07	0.02
Lead	0.0592	0.47	0.15
Manganese	0.3468	2.78	0.87
Mercury	0.0009	0.01	0.00
Nickel	1.224	9.80	3.07
Phosphorus	0.3060	2.45	0.77
Selenium	0.0054	0.04	0.01
TOTAL		36.69	11.50

Methodology

Emission Factors are from AP-42 (October 1996), Chapter 3.1, Table 3.1-4

Emission Factor for Chlorine/HCl is from EPRI emission factors.

Potential Emissions (tons/yr) = Potential Throughput (MMCF/yr) x Emission Factor (lb/MMCF) / 2,000 lb/ton

Limited Emissions (tons/yr) = Limited Throughput (MMCF/yr) x Emission Factor (lb/MMCF) / 2,000 lb/ton

Appendix A: Emissions Calculations
Fugitive Emissions from Unpaved Roads
Water Treatment Trucks, Service Trucks and Cars

Company Name: AES Greenfield, LLC
Address City IN Zip: South of Intersection of Routes 67/231 & Route 57, Greene County
CP: 055-10724-00034
Plt ID: 055-00034
Reviewer: Bryan Sheets
Date: 4-5-99

A. The following calculations determine the amount of emissions created by water treatment delivery systems on unpaved roads, based on 8760 hours of use and AP-42, Ch 11.2.1.

1	trip/hr x		
0.15	mile/trip x		
2	(round trip) x		
8760	hr/yr =	2628	miles per year

Ef = k*5.9*(s/12)*(S/30)*(W/3)^0.7*(w/4)^0.5*((365-p)/365)

=	4.40	lb/mile
where k =	0.8	(particle size multiplier)
s =	4.8	% silt content of unpaved roads
p =	125	days of rain greater than or equal to 0.01 inches
S =	10	miles/hr vehicle speed
W =	30	tons average vehicle weight
w =	18	wheels

4.40 lb/mi x 2628 mi/yr = 5.78 tons/yr
2000 lb/ton

B. The following calculations determine the amount of emissions created by cars and service trucks on unpaved roads, based on 8760 hours of use and AP-42, Ch 11.2.1.

4	trip/hr x		
0.15	mile/trip x		
2	(round trip) x		
8760	hr/yr =	10512	miles per year

Ef = k*5.9*(s/12)*(S/30)*(W/3)^0.7*(w/4)^0.5*((365-p)/365)

=	0.62	lb/mile
where k =	0.8	(particle size multiplier)
s =	4.8	% silt content of unpaved roads
p =	125	days of rain greater than or equal to 0.01 inches
S =	20	miles/hr vehicle speed
W =	2	tons average vehicle weight
w =	4	wheels

0.62 lb/mi x 10512 mi/yr = 3.28 tons/yr
2000 lb/ton